

Faces & Places

APPOINTMENTS

Pavel Logachev is new director of the Budker Institute

Pavel Logachev has been appointed director of the Budker Institute of Nuclear Physics (BINP), of the Siberian Branch of the Russian Academy of Sciences, in Novosibirsk, with effect from 1 June. He succeeds Alexander (Sasha) Skrinsky.

After studying accelerator physics at Novosibirsk State University, Logachev gained his PhD in experimental physics in 1996, for research at BINP on ultracold beams and short intense electron bunches. He has since become a well-known specialist on charged-particle beams and accelerator technologies. He has developed and successfully implemented high-frequency linear accelerators operating in the S-band, and built a unique linear induction accelerator



Pavel Logachev, now at the helm at BINP. (Image credit: Valentin Baev.)

to serve as an injector for a new-generation pulsed X-ray source for imaging.

A corresponding member of the Russian Academy of Sciences, Logachev has experience of scientific management and has been deputy director of BINP since 2013. He is also associate professor at Novosibirsk State University, giving lectures on sources of charged-particle beams and supervising numerous Masters and PhD students. Since 2013, he has been a member of the working group on "Infrastructure of scientific research", part of the Russian president's Council on Science and Education.

Marcel Demarteau takes over at Argonne

Marcel Demarteau has been appointed as the new director of the High Energy Physics Division at Argonne National Laboratory (ANL). He succeeds Harry Weerts, who was appointed interim associate laboratory director of Argonne's Physical Sciences and Engineering Directorate in May 2014 (*CERN Courier* July/August 2014 p35), and takes over from Rik Yoshida, who has been interim director of the High Energy Physics Division for the past year.

Demarteau has served as a senior scientist and the group leader for the instrumentation programme in the High Energy Physics Division since 2010. From 1992 to 2010, he

worked at Fermilab, where he was a member of the D0 collaboration and deeply involved in the analysis of precision electroweak-physics processes. He also managed the collider-detector instrumentation programme and the development of several generations of detector technology.

Building on Argonne's multidisciplinary nature, Demarteau will lead the division in its efforts to develop new detector technology for the next generation of accelerators and particle-physics experiments, and build on the laboratory's strengths, such as in high-performance computing and theoretical physics, to advance its science programme.

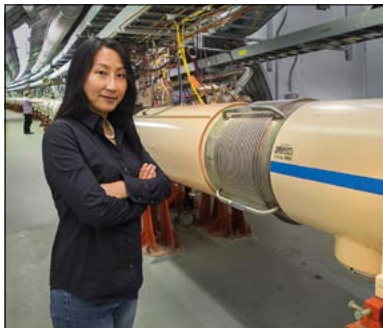


Marcel Demarteau, in charge of high-energy physics at Argonne. (Image credit: ANL.)

AWARDS

Bai and Schlegel receive 2014 Lawrence Awards

Mei Bai of Brookhaven National Laboratory and David Schlegel of Lawrence Berkeley National Laboratory are among the nine winners of the 2014 Ernest Orlando Lawrence Awards, which were established in 1959 to honour the memory of the inventor of the cyclotron. The awards recognize mid-career scientists and engineers in



Mei Bai in the RHIC tunnel. (Image credit: BNL.)

the US who have advanced new research and scientific discovery in the chemical, biological, environmental and computer sciences; condensed matter and materials; fusion and plasma sciences; high-energy and nuclear physics; and national security and non-proliferation.

Bai is honored with the nuclear-physics award for her "outstanding contributions to advancing understanding of the dynamics of spin-polarized beams and for the acceleration of polarized protons at the Relativistic Heavy Ion Collider (RHIC), making it the world's first and only high-energy polarized-proton collider". This work has allowed the first direct measurement of the gluon and

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sea-quark contribution to the spin of the proton. Schlegel, who is a long-time contributor to the Sloan Digital Sky Surveys (SDSS), receives the high-energy physics award for his “exceptional leadership of major projects making the largest two-dimensional and three-dimensional maps of the universe, which have been used to map the expansion rate of the universe to 10 billion light years and beyond”. His work has helped to ascertain the nature of dark energy, test general relativity and make precision cosmology an important tool in high-energy physics.

David Schlegel, with a SDSS plug plate used in mapping a small patch of the night sky. (Image credit: LBL.)



Brookhaven team honoured for building LHC magnets



Energy secretary Ernest Moniz (fourth from right) presenting the award to several members of the 17-person team, primarily based at Brookhaven Lab, including (from left): DOE Office of High Energy Physics federal project manager Bruce Strauss, Ramesh Gupta, Brookhaven site office federal project director Robert Caradonna, Mike Anerella, Piyush Joshi, Ron Prwivo, and project manager Peter Wanderer. (Image credit: DOE.)

Following the restart of the LHC in April, a 17-member team, primarily based at the Brookhaven National Laboratory, was recognized with one of the most prestigious awards of the US Department of Energy (DOE), for successfully completing two superconducting magnets for the collider.

Energy secretary Ernest Moniz presented the Secretarial Honor Award for Achievement to the team during a ceremony on 7 May at the DOE headquarters in Washington, “for successfully constructing, testing and

delivering the magnets to enhance the reliability of operations at the LHC”. The team completed this four-year, \$11.4-million project on time and under budget, with increased scope. Initially, CERN requested one magnet, and as the team made considerable progress, the project was expanded to include a second. The magnets were delivered to CERN separately, with the second of the two arriving in March 2014. Both magnets are now serving as backups for the collider system.

Matveev receives 2015 Markov Prize

Victor Matveev, the director of JINR Dubna, has been awarded the 2015 Markov Prize of the Institute for Nuclear Research of the Russian Academy of Sciences (INR RAS). He received the award at the 2015 Markov Readings, held at the INR on 15 May, for his “contribution to strong interaction theory and the quark model of hadrons”.

Matveev has made a number of important contributions in theoretical physics, including the development of methods of quantum field theory for studying high-energy scattering, the description of relativistic composite systems, the formulation of the quark theory of nuclear forces and studies of the effects of quark



Left to right: Valery Rubakov, a co-chairman of the Markov Readings, Victor Matveev, winner of the 2015 Markov Prize and director of JINR, Leonid Kravchuk, director of INR RAS, and Rozaliya Matveeva. (Image credit: INR.)

degrees of freedom in nuclei. He also introduced the notions of hidden colour and quark counting rules. He now works on the search for supersymmetry at the LHC.

The Markov Prize was established

by INR RAS in commemoration of Moisey Markov, who made pioneering contributions to neutrino physics, as well as to physics at the boundary between particle physics and cosmology.



Steve Myers, second from left, formerly CERN's director of accelerators and technology and now head of the CERN Medical Applications Office, was officially admitted as an honorary member of the Royal Irish Academy (RIA) on 29 May. He is seen here with Mary Daly, president of the RIA, and Tom Millar, left, and Matthew Zepf, right, of Queens University Belfast. This year, the academy is celebrating its 230th anniversary, and now has 493 members and 76 honorary members, in disciplines from the sciences, humanities and social sciences. Honorary members are usually academics who have made a major international contribution to their discipline, but who are not normally resident in Ireland. (Image credit: John Bambury.)

SCHOOL

Accelerators for medical applications

The CERN Accelerator School (CAS) and MedAustron jointly organized a course on accelerators for medical applications, in Vösendorf on 26 May–5 June. Held in the Eventhotel Pyramide on the outskirts of Vienna, the school attracted 76 participants of 29 nationalities, from countries as far away as Canada, China, Lithuania, Thailand, Ukraine and Russia.

The emphasis of the intensive programme of 37 lectures was on using charged-particle beams for cancer therapy. It began by covering the way in which particles interact with biological material, how this translates into the dose needed for treatment, and how this dose is best delivered. The different options for accelerators to provide the required particles were then presented in some detail. The course also covered the production of radioisotopes and how



Participants at the school, organized by CAS and MedAustron. (Image credit: Michael Holi.)

these are used for diagnostics and therapy, and provided a look at novel acceleration techniques that may play a future role in the field. A case-study exercise of 10 hours completed the programme. For this, the students were divided into small groups in which they pursued a given task to design a facility for hadron therapy, presenting their results on the final day.

A day-long visit to the MedAustron facility (*CERN Courier* October 2011 p33), with talks in the morning and visits to the facilities in the afternoon, also formed part of the programme. In addition to the academic activities, the students could

also join an excursion to the Benedictine monastery at Melk, combined with a boat trip on the Danube and a typical Austrian evening at a “Heurigen”.

Next year, CAS will be organizing a specialized course on free-electron lasers and energy-recovery linacs, on 31 May–10 June, to be held in Hamburg in collaboration with DESY. An introduction to accelerator physics will be held in Turkey in the autumn, and a second specialized course on injection and extraction will be held at CERN in early autumn.

● For further information on future CAS courses, visit www.cern.ch/schools/CAS.

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BINP

Alexander Bondar celebrates his 60th

Alexander Bondar, deputy director at the Budker Institute of Nuclear Physics (BINP) in Novosibirsk, was 60 on 27 May.

Bondar started work at BINP in 1973, while still a student of Novosibirsk State University.

He went on to become an expert in developing new methods of particle detection and in detailed effects in beam polarization, and participated in various experiments at the e^+e^- colliders in Novosibirsk.

Since the beginning of the 1990s, he has been active in the Belle collaboration at KEKB – the world's highest-luminosity e^+e^- collider at KEK in Japan. The caesium-iodide electromagnetic calorimeter was constructed and maintained by the Novosibirsk team under his guidance, and has worked reliably during the whole operation of Belle. In addition, he has contributed to the varied physics studied at Belle, suggesting a novel method for determining the angle γ of the unitarity triangle related to the Cabibbo–Kobayashi–Maskawa matrix – a fundamental parameter of the Standard Model. He has also played a leading role in discovering new exotic states of heavy bottomonium. Knowledge gained in these experiments allowed the Novosibirsk team to join experiments with the LHCb detector at the LHC.

Bondar actively represents BINP in Russia and abroad, and regularly presents new results in heavy-quark physics and organizes scientific meetings. He has been a member of CERN's Scientific Policy Committee (2006–2012), and a member of the International Committee for Future Accelerators since 2012. He continues to teach and supervise students of Novosibirsk State University, becoming dean of the Department of Physics in 2010.



Alexander Bondar, now 60. (Image credit: Valentin Baev.)

PT2026 NMR Precision Teslameter

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CORRECTIONS

An unfortunate error crept in at the end of a recent article on the first full jet measurement in Pb–Pb collisions by ALICE (CERN Courier June 2015 p7). The new measurement uses jet constituents down to a few-hundred MeV/c, rather than GeV/c.

In the same issue, a mistake also occurred in the book review on p41. The famous pioneer of applications of particle accelerators for society is of course Ugo Amaldi.

Apologies to all concerned.

OUTREACH

CERN scientist on FameLab podium

Lillian Smestad, a member of the AEGIS collaboration at CERN, took an excellent second place in the FameLab International final in Cheltenham on 4 June. She was one of nine finalists selected from hundreds in 20 countries worldwide, in the 2015 edition of the well-known science-communication competition, in which scientists have to engage the audience in a three-minute presentation on a scientific topic.

Smestad, from the Norwegian Research Council, gave a captivating talk on what would happen to you if you fell into a black hole. As Gill Samuels, one of the judges, noted, she was impressive “not only for the clarity of her presentation and the clarity of her answers, but for being brave to be the first

person on the stage”. It was the first time that a CERN competitor had reached the final – and also the first time that CERN had entered the contest as a separate entity, being the first organization, rather than nation, to compete.

Famelab, which was started in 2005 in the UK by the Cheltenham Science Festival, is sponsored by the British Council, and has seen more than 5000 young scientists and engineers participate in more than 23 different countries. CERN has been a partner of FameLab in Switzerland since 2012, and in France since 2014. This year, the winner of the international final Oskari Vinko and joint second François-Xavier Joly trained for the competition in masterclasses at CERN, which helped to



Lillian Smestad in action in the FameLab International final. (Image credit: FameLab.)

provide them with the content, clarity and charisma on which they scored so highly.

● For a video of the final, and more on the competition, see www.britishcouncil.org/education/science/famelab-international-final-2015.

WORKSHOP

Hadron physics in Tuscany

The first Italian Workshop on Hadron Physics and Non-Perturbative QCD (NPQCD 2015) took place in Cortona, Tuscany, on 20–22 April. Intended as an occasion for the Italian community involved in hadron physics and non-perturbative QCD to meet, discuss, exchange information and plan its future, the workshop was based on review talks and descriptions of current activities, with ample time left for discussions, and a concluding round table. With an attendance of around 60 scientists, it was highly successful in bringing together theorists and experimentalists in the field of hadron physics.

The idea of the workshop was born from discussions and events related to the “What Next?” process, promoted from early 2014 by INFN, and during the writing of a white book by the Commissione Scientifica Nazionale 1, the INFN committee that manages experiments at high-energy particle accelerators. “What Next?” aims to understand the current scientific scenario for all INFN activities and to propose a strategy for the next 10 years in the context of a 20-year global vision.

The workshop’s themes were identified starting from the consideration that in most interactions involving hadrons, the dynamical properties and degrees of freedom of quarks and gluons combine with some non-perturbative QCD aspects to give



Participants at the workshop in Cortona. (Image credit: NPQCD 2015.)

measured physical quantities. The description of and attempts to understand such properties are the subject of various branches of hadron physics: three-dimensional nucleon structure; hadron spectroscopy; proton–proton cross-sections, elastic scattering and diffraction physics; multi-parton interactions and underlying events; and cosmic rays and accelerator physics.

The different working groups at the workshop covered a broad programme, from experiment to theory, through phenomenology, in an effort to identify crucial aspects, open issues and future prospects. Several aspects emerged:

- The three-dimensional structure of protons and neutrons, both in momentum and co-ordinate space, represents a new phase in imaging the nucleon that goes beyond the traditional and simple one-dimensional picture of a fast-moving nucleon as a bunch of collinearly moving partons.
- The plethora of new data from B and charm factories, besides completing the conventional spectra of mesons and baryons,

have indeed opened up promising pathways to a new spectroscopy: multi-quark degrees of freedom, predicted in QCD since its birth, have finally been observed with unambiguous signatures. At the same time, the wealth of discoveries has raised even more intriguing questions, and high-statistics data from current and future facilities are eagerly awaited, to gain further insights into strong interactions.

- Total, elastic and diffractive cross-sections are of fundamental importance to understand the mechanisms of hadronic interactions and their evolution with respect to centre-of-mass energy and momentum transfer.
- The dynamical QCD properties of partons become crucial when processes involving hadrons at large energies take place, and the role of multi-parton interactions, rather than a single elementary interaction, has to be explored and understood.

The concluding round table focused on links between the various topics, common problems, and possible strategies to

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tackle them, exploiting all of the tools and knowledge of the hadron-physics community. A couple of highlights are worth mentioning. Recent progress in the modelling of multi-parton interactions can be helpful in the description of parton distribution functions, both in collinear and three-dimensional representation, and in the study of spin and quark angular-momentum correlations. Also, precise knowledge of

the cross-sections and of the properties of particle production in hadronic collisions is crucial to reduce systematic errors in several measurements of great astrophysical interest. Notably, data on antiproton production in proton–helium collisions are highly desired to help understand recent data from the Alpha Magnetic Spectrometer experiment and, more generally, searches for antimatter in the universe.

The workshop was supported by the University of Torino, the Sezione INFN of Torino, and by the University of Piemonte Orientale. Special thanks go to the conveners for their work and enthusiasm. The success of the workshop led to the unanimous decision to hold it on a yearly basis.

● For details about the working groups and the workshop programme, visit <http://npqcd15.to.infn.it>.

TECHNOLOGY TRANSFER

HEPTech brings an entrepreneurial perspective to research

The CERN-fostered High Energy Physics Technology Transfer Network (HEPTech) brought together young researchers with entrepreneurial and technology-transfer potential at its second annual symposium, which was hosted by Inovacentrum at the Czech Technical University in Prague, on 31 May–6 June. The event was attended by 17 early stage researchers from Bulgaria, the Czech Republic, Hungary, Italy, Lithuania, Romania, Sweden, Switzerland and the UK. They had been carefully selected, in terms of both eligibility and entrepreneurial potential, from 27 applicants, by a panel of HEPTech experts.

The five-day programme addressed the needs of the young researchers as potential entrepreneurs, by introducing them to topics including issues relating to patent law and intellectual property protection, how and where to find help when starting a new business, what ideas work best for incubation, how to promote and market their research results, and how to attract an investor. Best practice on successful start-ups and products was presented, such as the story of the creation and growth of the Raspberry Pi (an affordable, credit-card-sized computer for educational purposes), and the lessons young entrepreneurs could learn from it. The participants were also introduced to the infrastructure and market potential of the Extreme Light Infrastructure facility hosted by the Institute of Physics at the Czech Academy of Sciences.

The topics were presented by commercially experienced professionals and technology-transfer experts, such as Markus Nordberg of CERN, who spoke about the use of cross-disciplinary teams in creating ideas for new products, and Stephen Blake, a European patent attorney who ran a practical workshop discussing the best intellectual-property protection for a particular case. Jean-Marie Le Goff of CERN, and HEPTech chair, addressed the multi-faceted



Participants in Prague. (Image credit: Petr Pulc, CTU, Prague.)

relationships between research, innovation and industry. He discussed the context of these relationships and explored possible routes for setting up R&D collaborations with industry.

An expert team on innovative product design inspired the young researchers, and made them realize that they were creative and could come up with practical applications for their technology. In one day, the participants went through the main phases of the process of converting research results into a marketable product. All of the experts acknowledged the mutual benefits of networking with young researchers and declared their intention to continue communications with them.

On the last day of the symposium, the participants learnt the lesson that finding the right investor was like finding a life partner and were introduced to the top 10 steps for attracting investors. They gave three-minute pitches on their technologies, and received recommendations for marketing and commercialization from two business investors.

Two special awards provided by the Raspberry Pi Foundation were given for the project that attracted the investors'

attention and for the participant who had progressed the most over the week. The first went to Florina Tuluca of the Institute of Geodynamics of the Romanian Academy, Bucharest, for her prototype of a soil-pollution testing device, thus giving her confidence in the market potential of her research. The second award went to Lyubomir Stoyanov of the Faculty of Physics, Sofia University, who, in one week, managed to move physics out of the lab and onto the market.

The overall opinion of the participants was that they had attended a meeting with a unique format, which introduced them to knowledge they had never accessed before, provoked their creativity and gave them a different perspective on research. They described their experience as "life changing" and a "brilliant combination between theory and practice".

● HEPTech organizes many events (CERN Courier April 2015 p17). Coming soon are: September 2015, Bulgaria: Workshop on Marketing of Science and Technology (Follow-Up); October 2015, Romania: AIME on ELI-NP and High Energy Laser Applications; November 2015, Italy: Best Practice in Technology Transfer.

INDUSTRY

Romanian firms visit CERN



Maria Ciobanu, left, at the inauguration ceremony in the CERN Council Chamber, right, for the first visit of Romanian firms to the laboratory. (Image credits: CERN-PHOTO-201505-082-19 and CERN-PHOTO-201505-082-24.)

The Bucharest Chamber of Commerce and Industry, in partnership with the Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, and with the collaboration of the Association of Exporters and Importers of Romania, organized the first economic mission of Romanian firms to CERN on 19–21 May. The event, attended by participants from 13 Romanian companies, was inaugurated

in a ceremony in the Council Chamber by Maria Ciobanu, ambassador extraordinary and plenipotentiary permanent representative of Romania to the United Nations Office and other international organizations in Geneva. On the following two days, the participants were able to learn about procurement at CERN, meet with technical experts and visit points of interest at the laboratory.

NEW PRODUCTS

Finisar's new WaveShaper 1000/SP 1µm Programmable Single Polarization Filter shapes femtosecond and short-picosecond optical pulses in fibre laser systems, in applications such as precision micromachining, spectroscopy and quantum control systems. The new 1µm WaveShaper module enables stable operation of short-pulse laser systems in harsh environments, by providing precise control of the spectral characteristics of the optical signal. For further information, contact Jan Brubacher, AMS Technologies, e-mail jbrubacher@amstechnologies.com.

Highland Technology has introduced a new VME model, the V280 Isolated Digital Input Module. The V280 features 48 individually isolated digital inputs, with programmable debounce times and extended overload protection. It will accept DC or AC inputs, and includes glitch-catch capability. Versions are available for 24-V and 3.3/5-V logic-level inputs. For more details, e-mail info@highlandtechnology.com or visit www.highlandtechnology.com/DSS/V280DS.shtml.

Murata has introduced the NMUSB202MC, a competitively priced surface-mount powered data-isolator module that

conveniently provides dual port USB data and power isolation from a single upstream port with full power (500 mA) available from each port. Used with a host controller, a single module counts as two USB hubs for cascaded applications, with the level of safety isolation additionally providing effective breaking of ground loops and immunity to EMI in harsh environments. For further information, contact Donia Kamil, e-mail dkamil@murata.com or visit www.murata.com.

Spectrum Systementwicklung GmbH has extended its digitizerNETBOX series of LXI-based instruments, and released eight new models for applications where fast electronic signals in the GHz range need to be remotely acquired and analysed. Available with two, four or eight fully synchronous channels, the new units feature sampling rates up to 5 GS/s, bandwidth in excess of 1.5 GHz, and on-board acquisition memory up to 8 GS. Spectrum has also announced the release of three new M4i series Arbitrary Waveform Generators. The new models of the M4i.66xx series offer one, two and four channels, with each channel capable of outputting electronic signals at rates of up to 625 MS/s with 16 bit vertical resolution. For more details, e-mail info@spec.com or visit www.spectrum-instrumentation.com.

VISITS



The Lithuanian minister of health, **Rimantė Šalaševičiūtė**, here with the director-general **Rolf Heuer**, came to CERN on 20 May. Her visit included meetings with scientists involved in medical applications at CERN and the CERN MEDICIS facility (CERN Courier November 2013 p37). (CERN-PHOTO-201505-084 – 5.)



On 2 June, **Petr Drulák**, left, the Czech Republic's deputy minister of foreign affairs, was welcomed to CERN by **Rüdiger Voss**, head of international relations. The minister went on to see the Synchrocyclotron exhibition and the ATLAS visitor centre. (CERN-PHOTO-201506-121 – 3.)

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OBITUARIES

Rudolf Böck 1935–2015

The particle-physics community has been saddened to learn of the sudden and unexpected death of Rudolf (Rudy) Böck, on 15 April at the age of 80.

Rudy obtained his PhD in Munich, and started work at CERN in October 1959 as a mathematician in the Data Handling Division. These were pioneering days for the application of computers to the analysis of data from experiments, and he worked on problems ranging from finding camera positions on a new bubble chamber to the more generic fitting of kinematic variables to measured tracks. He was a member of the small team of “ace programmers” who produced a standard suite of programs (REAP, THRESH, GRIND) for data analysis in bubble-chamber experiments. While these were initially written in FORTRAN II, it became clear that greater portability was required, and therefore the CERN Track Chamber Program Library was written in “CERN FORTRAN”, which was designed to simplify porting to the various dialects of FORTRAN that were then emerging. This library of programs was used by many bubble-chamber groups throughout Europe and further afield, and Rudy was involved in producing code and documentation, as well as in the installation at some of these sites.

The 1970s saw the further evolution of this software into the HYDRA framework, which added advanced mechanisms to handle large data and program structures, and the development of automatic film-measuring machines, where Rudy was involved in defining the software for the CERN ERASME system. Following this came the move away from bubble chambers to electronic experiments in which greater data selectivity allowed increasingly rare events to be studied. Rudy went on to



Rudy Böck. (Image credit: Gabi Böck.)

work on several such experiments: WA7, UA1 (where he helped to introduce the third-level software trigger) and JETSET at LEAR. However, his great passion was for more generic work, and in the 1980s he was one of the initiators and promoters of the Physics Analysis Workstation (PAW). The PAW package, which was used across the majority of experiments in CERN, combined earlier ideas of data analysis with the user-friendliness of the new personal workstations to provide powerful interactive analysis systems.

Rudy subsequently turned to the study of how developments in computing could be applied to triggering at future colliders. These studies were initially within the LAA project (CERN Courier March 2014 p26), but then on a larger scale within the RD11 (EAST) collaboration. RD11, which he led, focussed on second-level triggering for the LHC, bringing together many people

with different backgrounds and ideas. Over several years, RD11 made a comprehensive study of the suitability of a range of possible solutions and technologies for the challenges to be faced. These studies fed into each of the LHC experiments, but particularly into ATLAS, which Rudy joined together with many members of RD11. Within ATLAS, Rudy was deeply engaged in second-level trigger activities – from physics requirements and architectural design to studies with early prototypes.

In parallel to the work on experiments, Rudy worked with other experts to produce two important reference texts – *Data Analysis Techniques for High Energy Physics Experiments* (1990 and 2000) and *The Particle Detector Brief Book* (1998).

He retired from CERN in 2000, but pursuing his passion for astrophysics, joined the MAGIC experiment in La Palma as a member of the MPI Munich group, splitting his time between Munich and Geneva. He started teaching and implementing methods of multivariate analysis within the collaboration, and took a leading role in the major effort to produce data-analysis software for the MAGIC telescopes.

Rudy will be remembered as a charming, kind and generous man, always interested and ready to help and share his wisdom, both in professional and other matters. His colleagues greatly appreciated his vision and professionalism, as well as his broad knowledge and almost limitless energy. His many interests outside of work included sailing, music, mountain activities and enjoying good food and wine with friends.

Our thoughts go to his family, and to the many who have shared an important part of their professional lives with Rudy.

● *His friends and colleagues.*

Gerhard Höhler 1921–2014

Gerhard Höhler, professor of theoretical nuclear physics in Karlsruhe, died on 4 June, at the age of 93.

Born in 1921, Höhler completed his abitur (A-levels, college preparatory high-school diploma) in 1939 in Berlin, and began his study of physics the same year. After military service and time as a prisoner of war in the US, he continued his studies at the

Technical University in Munich and later at the Humboldt University in Berlin. His doctoral thesis in experimental physics dealt with the optical characteristics of cadmium sulphate. Thereafter he switched to theory, in which he received his PhD in 1950 with his dissertation on the generalization of Maxwellian electrodynamics. Höhler's time in Berlin came to a close in 1952,

when he obtained a position with Richard Becker in Göttingen to qualify as a professor (habilitation). Becker died before the habilitation was completed, so Höhler accepted an offer from Friedrich Bopp and attained his habilitation in Munich in 1956, with a study of electron–phonon interactions in ion crystals.

In Munich, Höhler began a reorientation

in his scientific interests. He studied problems of theoretical nuclear and particle physics, received several offers of professorships, and became chair of theoretical physics at the University of Karlsruhe. His area of research at his new university remained that of elementary-particle physics. Together with his many co-workers, doctoral and undergraduate students, H  hler produced a large number of important scientific results in the following 30 years until his retirement. Examples include the photoproduction of mesons, nucleon and pion form factors, the validity of dispersion relations, the sigma term and especially pion–nucleon interactions. These studies brought H  hler much international acclaim.

The so-called Karlsruhe–Helsinki phase-shift analysis, KH80, is still used as a standard for pion–nucleon interactions and non-strange baryon resonances. His famous book *Elastic and Charge Exchange*



Scattering of Elementary Particles (Landolt-B  rnstein 1983) is usually called the “H  hler Bible”. H  hler also contributed for several years to the *Review of Particle Physics*, and was a co-creator and co-editor

Gerhard H  hler. (Image credit: Herwig Schopper.)

of the πN Newsletter.

Recognition of H  hler’s expertise is reflected in his appointment to the scientific council of DESY (Hamburg), as well as in his long-term membership of the Advisory Committee of the federal research ministry of Germany. In addition, he earned merit as the editor of publications and monographs, among others the *Springer Tracts in Modern Physics*. He was also a dedicated university professor who continually incorporated new areas in his lectures and, when possible, in the curriculum. The development of new courses, such as “Computer Theoretikum”, is an example of his commitment.

● William Briscoe, Wolfgang Kluge, Johann K  hn, Peter Kroll, Mark Manley, Jugoslav Stahov, Hans-Martin Staudenmaier, Igor Strakovsky, Alfred Svarc, Lothar Tiator.

Fran  ois Wittgenstein 1931–2015

Fran  ois Wittgenstein, well known for his work on generations of magnets at CERN, passed away on 1 May.

Fran  ois received his diploma as electro-engineer at the Ecole Polytechnique F  d  rale de Zurich in 1955 at the age of 24. He started his career in industry by taking up a job with the Maschinen Fabrik Oerlikon Zurich, to work first on electrical locomotives and then on magnets. In 1961 he joined CERN, and was first involved in calculations for the magnet for the 2-m bubble chamber, before being put in charge of various projects relating to beams feeding the bubble chambers: magnets, collimators and even an electrostatic separator.

In 1966, Fran  ois joined the nascent Big European Bubble Chamber (BEBC) project – a special French–German–CERN programme – that was implemented at CERN during the early 1960s. With his experience as an electrical engineer in industry, Fran  ois was put in charge to set up a technical group within the BEBC project that would be responsible for the design and construction of a very large superconducting magnet. This would provide a magnetic field of 3.5 T, uniform over the sensitive bubble chamber volume of 35 m³. The stored energy of 800 MJ for a single magnet was a record at the time and would remain so until the end of the 20th century. During all of the years up to the end of BEBC, Fran  ois and his team



Fran  ois Wittgenstein. (Image credit: Mrs Wittgenstein.)

supervised the correct operation of their large magnet.

With the closure of BEBC in 1984 and the start of construction of the Large Electron–Positron collider at CERN, Fran  ois and his team took up the task of constructing an even larger magnet again. This time, the magnet was normally conducting but nevertheless equally challenging – the assembly of the huge aluminum coils for the magnetic volume of the L3 experiment. This huge magnet is still an integral part of the ALICE experiment at point 2 on the LHC.

At the beginning of the 1990s, Fran  ois pushed the early development of large conductors that were needed for the proposed large LHC experiments. Besides numerous tests in relation to the extrusion parameters, he played an essential role, in collaboration with ETH Z  rich, in the development of the system for online quality-control of the conductor, in particular, of its geometry and the quality of the joint between the copper cable and the aluminum stabilizer. He continued to take an active interest in this topic after reaching retirement age and, following the approval of the LHC experiment collaborations, he was appointed member of the technical Magnet Advisory Group to review magnet construction until the early 2000s.

After retiring in 1996, Fran  ois was also active in the CERN-ESO Pensioners’ Association (GAC-EPA). After many years as observer to the Pension Fund Governing Board, he was formally appointed as the first representative of GAC-EPA to the governing board, when the new governance for the pension fund was introduced in 2006. During this period he faced many, often turbulent and sensitive issues, but his competent contributions and his strong commitment to this task were broadly acknowledged from all sides.

Fran  ois was a real “CERNois” – we will miss him greatly.

● His colleagues and friends.